

# **Negative Price Differential Pressure on the Williston Basin Crude Oil Market: Contributing Factors and Potential Solutions**

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Northern Alliance of Independent Producers  
and  
North Dakota Oil and Gas Research Council**

## **Executive Summary**

During the winter of 2005/2006 significant crude oil pricing differentials negatively impacted producers operating in the Rocky Mountain region and Williston Basin markets in particular. The driving factors behind this price differential are numerous, but most importantly include the limited regional refining capacity (exacerbated by refinery repair and retrofitting activities), the limited export pipeline capacity, near-term increasing crude production within the Rocky Mountain region, longer-term increasing production and importation of Canadian crude, and inadequate and untested regulatory regimes. Potential solutions are also numerous, but can be summarized as increasing regional refining capacity, increasing export pipeline capacity, and revision of pipeline nomination and apportionment protocols. These first two solutions require potentially significant capital expenditure and lead-time for implementation, the efficacy of which maybe limited as Canadian imports are likely to expand, so addressing US Federal Energy Regulatory Commission rules for the nomination of crude volumes and pipeline apportionment protocols may well offer the greatest benefit to Williston Basin producers over the near-term.

## **Introduction**

Crude oil production within the Williston Basin currently totals approximately 200 M bpd (thousand barrels of oil per day). This crude is shipped to refineries within the Rocky Mountain region (for the purposes of this discussion: Colorado, Idaho, Montana, North Dakota, Utah, and Wyoming) or it is exported out of the region on either the Enbridge North Dakota pipeline to Clearbrook, Minnesota or from the Guernsey, Wyoming hub via the Kinder Morgan Platte Pipeline (ND DMR, 2006). Refining capacity within the Rock Mountain region actually exceeds the regions' crude oil production (see mass balance spreadsheet **Table 1**); however, the regional refineries also process significant volumes of crude imported from Canada (Richards, 2006 and EIA website). Furthermore, the limited regional refining capacity issue was exacerbated by repairs following two fires at the Suncor refinery in Commerce City, Colorado (Denver area) and retrofitting to allow processing of greater volumes of sour Canadian crude at the same facility (ND DMR, 2006). Crude oil exports from the Rocky Mountain region are limited by the approximate 227 M bpd combined capacity of crude oil export pipelines (see **Table 1**). Likewise, the market for refined products within the Rocky Mountain region is limited, as is export product pipeline capacity to growing markets outside the region (ND DMR, 2006). Together, these factors serve to limit regional consumption and overall export capacity.

Since late 2005 (PPLC, 2006) this combination of factors has resulted in a net excess of crude oil within the Rocky Mountain region which in turn has exerted significant downward pressure on spot market prices for Williston Basin crude – up to \$31 less on the New York Mercantile Exchange (NYMEX). At a \$10 to \$30 per barrel discount there is a \$2MM to \$6MM daily loss for the Williston Basin regional producers as well as

**Table 1**  
**Rocky Mountain Region Oil Balance**  
in M bpd

Cagtegrory	Current Stated Capacity	December 2005 Actual <sup>1</sup>	March 2006 Actual <sup>1</sup>	June 2006 Actual <sup>1</sup>	2007 Predicted <sup>2</sup>	2008 Predicted <sup>2</sup>	2009 Predicted <sup>2</sup>	2010 Predicted <sup>2</sup>
<b>Pipeline Imports</b>								
KM - Express Pipeline *	280							
Cenex - Front Range Pipeline - approx.	75							
PEP - Western Corridor (Glacier System) *	25							
True - Eastern Corridor *	30							
<b>Import Total <sup>3</sup></b>	<b>410</b>	<b>281.8</b>	<b>218.2</b>	<b>262.4</b>	<b>288.3</b>	<b>311.3</b>	<b>336.2</b>	<b>363.1</b>
<b>Local Production</b>								
Colorado	62	58.9	59.8	61.4	61.7	61.7	61.7	61.7
Montana	99	96.5	98.7	97.5	96.4	101.2	101.2	101.2
North Dakota	106	103.7	105.5	111.6	102.7	105.8	108.9	112.2
South Dakota	4	4.2	3.9	3.8	3.9	3.9	3.9	3.9
Utah	50	48	45	46.7	45.7	45.7	45.7	45.7
Wyoming	144	139.3	153.5	122.9	146.1	153.4	153.4	153.4
<b>Production Total</b>	<b>465</b>	<b>450.6</b>	<b>466.4</b>	<b>443.9</b>	<b>456.4</b>	<b>471.6</b>	<b>474.8</b>	<b>478.1</b>
<b>Refinery Consumption</b>								
Billings - Cenex **	55							
Billings - ConocoPhillips **	58							
Billings - ExxonMobil **	60							
Casper - Little America **	24.5							
Cheyenne - Frontier Oil *	52							
Denver - Suncor *	90							
Evanstone - Silver Eagle **	3							
Great Falls - Montana Refining **	8.2							
Mandan - Tesoro **	58							
Newcastle - Wyoming Refining **	12.5							
Rawlins - Sinclair **	66							
Salt Lake - ChevronTexaco **	45							
Salt Lake - Flying J *	31							
Salt Lake (Woods Cross) - Holly **	24.7							
Salt Lake (Woods Cross) - Silver Eagle **	10.25							
Salt Lake - Tesoro **	58							
<b>Refining Total <sup>4</sup></b>	<b>656.15</b>	<b>514.2</b>	<b>474.4</b>	<b>580.4</b>	<b>565.5</b>	<b>573.9</b>	<b>582.5</b>	<b>591.3</b>
<b>Pipeline Exports</b>								
KM - Platte Pipeline (east of Guernsey) *	143	143	143	143	143	143	143	143
Enbridge - ND Pipeline *	91.5	84	84	91.5	114	114	114	114
<b>Export Total</b>	<b>234.5</b>	<b>227</b>	<b>227</b>	<b>234.5</b>	<b>257</b>	<b>257</b>	<b>257</b>	<b>257</b>
<b>Balance</b>	<b>-15.65</b>	<b>-8.8</b>	<b>-16.8</b>	<b>-108.6</b>	<b>-77.8</b>	<b>-48.0</b>	<b>-28.5</b>	<b>-7.1</b>

Notes: \* = capacity as stated by company website, as of Oct./Nov. 2006.

\*\* = capacity as stated by Energy Information Administration (EIA) website, last updated January 1, 2006.

<sup>1</sup> = actual production data from EIA website

<sup>2</sup> = predicted production data based on the average production from Jan 2005 to June 2006 (EIA website) with the following annual increases:

Colorado, South Dakota, and Utah remain constant

Montana increases 5% in 2007 and 2008 then remains constant

North Dakota increases 3% each year through 2010

Wyoming increases 5% in 2007 and 2008 then remains constant

<sup>3</sup> = predicted pipeline imports are based on the average imports from Jan 2005 to Oct 2006 (EIA website) with an annual increase in western Canadian crude production of 8% (based on CAPP projections) plus the proposed Keystone Pipeline project scheduled to come on line in 2009

<sup>4</sup> = predicted refinery consumption is based on the average consumption from Jan 2005 to Oct 2006 (EIA website) with a nominal 1.5% annual increase

negative balance = combined refining and export pipelines have available capacity to accept more crude oil.

positive balance = combined refining and export pipelines capacity is exceeded creating a net surplus of crude oil.

significant losses in state and local tax revenues. This below market crude pricing potentially threatens future investments geared towards:

- 1) continuing to produce marginal wells
- 2) exploring for new opportunities
- 3) engaging in significant enhanced oil recovery (EOR) projects

The purpose of this paper is to examine the contributing factors and to discuss potential strategies to mitigate future price differential within the Rocky Mountain region and Williston Basin in particular. The contributing factors considered include:

- 1) growth and decline of domestic production
- 2) imports of Canadian crude oil
- 3) limitations on refining within the Rocky Mountain region
- 4) limitations on pipeline exports from the Rocky Mountain region
- 5) related administrative/regulatory issues
- 6) softness in the consumer market

## Background

A material balance for the Rocky Mountain region has been prepared and is provided as **Table 1**. The material balance includes imports into the region, regional crude oil production, refining within the region, and crude oil exports out of the region. Refined product exports from the region are not included because the first limiting factor facing regional crude is available capacity at the refineries themselves or pipeline export capacity as crude.

Williston Basin oil production has increased significantly from a low in 1995 to present volumes which approach the record production of the early 1980's (Enbridge, 2006 and Muse Stancil, 2006). Enbridge (2006) has projected Williston Basin production to peak in the 2010-2012 timeframe, others have predicted peak to occur as early as 2008. Currently, production from the Williston Basin is approximately 209 M bpd; Rocky Mountain regional production, including North and South Dakota, totals approximately 445 M bpd and is predicted to increase to approximately 480 M bpd (see **Table 1**).

A significant portion of this crude is refined locally within the Rocky Mountain region. In fact, regional refinery capacity exceeds regional production by up to approximately 200 M bpd (see **Table 1**); so, substantial volumes of imported Canadian crude are also refined in the region. Oil is also exported from the region; including domestic production and a portion of throughput Canadian crude oil. Currently, two pipelines export crude out of the region; numerous other pipelines transport crude to refineries within the Rocky Mountain region. The two export pipelines are Kinder Morgan's Platte Pipeline (PPLC) from Casper, Wyoming to Wood River, Illinois which has a capacity of 143 M bpd outbound from Guernsey, Wyoming (PPLC, 2006) and the Enbridge North Dakota Pipeline originating in Alexander and Grenora, North Dakota and flowing to Clearbrook, Minnesota which has a capacity of approximately 90 M bpd east of Minot, North Dakota (Enbridge, 2006). Relatively minor amounts of Williston Basin crude are exported by truck to Canada (ND DMR, 2006). Imports of Canadian crude oil into the Rocky Mountain region are transported via the Kinder Morgan Express Pipeline, the Pacific Energy Partners Western Corridor (Glacier) Pipeline System, and the Cenex Front Range Pipeline (see **Table 1**).

A material balance for the Williston Basin alone has not been prepared because accurately identifying the transportation and refining uptakes specific to regionally produced crude oil proved to be impractical; much of this data appears to be proprietary and not publicly available. As shown on **Table 1**, the stated capacities of the

pipelines and refineries yields a negative balance indicating available capacity to refine or export additional crude oil. However, available excess capacity was not the experience domestic producers have encountered in practice. In fact, from December 2005 to present there has been a significant over abundance of crude oil in the Rocky Mountain regional market resulting in pipeline proration and downward pressure on spot marked crude prices resulting in the dramatic price differential.

## **Contributing Factors**

### Domestic Production Trends

Beginning in early 2005, NYMEX spot market prices have climbed to record levels (Enbridge, 2006). This in turn has stimulated domestic production and exploration thus reversing the regional production decline trend and creating a production growth mode (IOGCC, Undated b). This growth in production has not been paralleled by increases in export transportation capacity. The result has been that production exceeds export transportation capacity creating either an inability to market the oil or a depressed price for the oil that can be marketed (ND DMR, 2006)

### Canadian Production Trends

Production and importation of Western Canadian Sour (WCS; heavy sour crude) and Canadian synthetic crude oil are both increasing (CAPP, 2006; IOGCC, Undated b; and Muse Stancil, 2006). To service this production, Kinder Morgan expanded capacity on their Express Pipeline from 172 to 280 M bpd (CAPP, 2005). The Express pipeline transports WCS from Hardisty, Alberta to Casper Wyoming where it connects with Kinder Morgan's Platte Pipeline which has a capacity of 164 M bpd from Casper to Guernsey, Wyoming but only a 143 M bpd takeaway capacity downstream of Guernsey (Kinder Morgan website and PPLC, 2006). Consequently, there has been an oversupply of WCS into the Guernsey Market following expansion of the Express Pipeline (IOGCC, Undated a).

### Refining Capacity

Limited refining capacity and temporary loss of a portion of that capacity also contributed to the 2006 price differential. There have been no significant changes in refining capacity among Rocky Mountain region refineries in the last 20 years (IOGCC, Undated b). The total US refining capacity in 2006 is 17.3 MM bpd, a 12% increase over that in 1996 (no new refineries have been built in the US in the last 30 years). Suncor which operates two neighboring refineries in Commerce City, Colorado experienced two fires which resulted in a temporary loss of 60 M bpd refining capacity from December 2005 through May 2006 (ND DMR, 2006). Suncor upgraded its refining equipment during that time to allow processing greater volumes of WCS (Suncor, 2006).

The 2005 hurricanes caused damage and disruption to the Gulf Coast refinery market. This decrease in Gulf Coast refining capacity required Rocky Mountain region refineries to continue at full output during their normal maintenance season (IOGCC, Undated b). This may have actually created some additional demand for Williston Basin crude as compared to a "normal" year. Therefore, had the Rocky Mountain refineries decreased capacity, as they normally would during their turn-around season, it is possible that the oversupply of crude and resultant price differential could actually have been worse than what was experienced.

### Export Pipeline Capacity

There is limited market choice for Williston Basin crude because of limited export transportation options (IOGCC, Undated a). Currently, only two pipelines provide for the transport of crude oil out of the Rocky Mountain region: the Kinder Morgan Platte Pipeline (143 M bpd) and the Enbridge North Dakota Pipeline (91.5

M bpd). Together, these pipelines have a carrying capacity of 234.5 M bpd which will increase to 257 M bpd by yearend 2007 (see discussion of Enbridge expansion under solutions).

The Petroleum Administration for Defense District (PADD) system divides the US into five geographic districts established during World War II to facilitate regional allocation of oil. At that time, the first use of long distance, high volume pipelines were established as a countermeasure to pre-empt marine tanker sinkings by German submarines along the Atlantic and Gulf Coasts. Ultimately, the pipeline systems and PADDs largely shaped the petroleum industry and post-war economic boom within the US (Trench, 2001). The pipeline system that the Guernsey market is controlled by is typical of the US PADD system of pipeline based crude and product distribution. The Rocky Mountain region is within PADD IV; the Clearbrook, Minnesota and Wood River – Patoka, Illinois hubs fed by the Kinder Morgan Platte and Enbridge North Dakota Pipelines are located within PADD II. Strictly speaking, North (and South) Dakota (discussed herein as part of the Rocky Mountain region) is part of PADD II; however, because the exporting pipelines are the same as those for PADD IV it can be included in the Rocky Mountain region as defined herein.

#### Administrative/Market Issues

The new Ultra Low Sulfur Diesel (ULSD) federal fuel standard required refinery modifications before June 2006. Additionally, some Rocky Mountain region refineries added (or are planning to add) coking units allowing processing of low gravity, high sulfur crudes such as WCS into fuels rather than just into asphalt. Therefore, some refineries are no longer as dependent on Wyoming Sweet Crude for fuel production as they previously had been (IOGCC, Undated a and b).

The large volume production of WCS and Canadian synthetic crude oil provide for negotiation of large volume, long-term contracts with refineries (IOGCC, Undated b) and in some cases the US refineries are actually owned by Canadian companies (e.g.: Suncor). The average regional domestic producer does not have a similar volume; therefore, they are at a potential pricing disadvantage when negotiating contracts resulting in excess crude not being purchased by refiners within the region.

#### Regulatory Issues

Oil pipelines are governed by the US Federal Energy Regulatory Commission (FERC) through the Interstate Commerce Act (ICA). The ICA requires that rates charged for crude oil transport must be just and reasonable. The ICA prohibits an oil pipeline company from subjecting a shipper to undue or unreasonable preference or disadvantage.

*“As common carriers, oil pipelines cannot allocate capacity on a first-come, first-served basis, or to the highest bidder. If more volumes are tendered than the pipeline can accommodate, the pipeline must allocate capacity in a non-discriminatory manner. Many pipelines allocate pro rata based on the volumes nominated. Some pipelines use, and FERC has approved, historical shipments as a basis for the pro rata allocation.<sup>i</sup> Under this method, a shipper’s volumes over a specified period (3-12 months) form the basis for rationing the capacity, and a small amount of capacity, ranging from 3-15%, but typically 5% is reserved for “new” shippers to allow shippers to build up historical volumes over time. FERC requires that an oil pipeline’s prorating method be included in its tariff<sup>ii</sup>” (IPAA 2006).*

Prorating on the Platte Pipeline (PPLC, 2006) had been based on shippers “...nominations as a percentage of available capacity...” with “...an obligation on shippers to either ship or pay for 95% of their ‘binding nominations’ once prorating is declared for a given month.” This FERC system allowed for the

manipulation of pipeline allocations by submission of inflated nominations vs. actual delivery (IOGCC, Undated a; PPLC, 2006 a and b), albeit with the stated penalty. The penalty for over nominating in some instances appeared inadequate to discourage over-nominations by some shippers who sought to protect their own capacity. By over-nominating a shipper could minimize the proportional reduction of pipeline capacity they would otherwise experience, giving them greater ability to ship in a constrained market. More recently, PPLC has moved to modify this system by adopting an alternative prorationing program based on a six-month rolling average to establish nomination history, providing for 10% capacity reserve for “new shippers” (vs. the 3% previously held) and a shipper can qualify as “new” if they have shipped in four or fewer months of the six-month rolling average period), and the re-allocation among all shippers of any capacity unused by a regular shipper. This new proration scheme was proposed specifically to address the problem of gamesmanship through inflated nominations to secure, or maintain, a transportation share in the face of increased production and decreased refining (PPLC, 2006a).

### Market Issues

Relatively soft consumer market demand also contributed to the oversupply of crude oil due to reduced driving (as a result of higher fuel costs) and milder average winter temperatures (IOGCC, Undated a). Refinery turnaround required by seasonal fuel formulation requirements also serve to temporarily reduce refinery throughput. Overall however, the long-term market is one of increasing consumer demand (IOGCC, Undated b).

### **Resulting Market Conditions**

The combination of required seasonal maintenance, retrofits to address ULSD, refinery fires, increased importation of WCS, and increasing domestic production within the Williston Basin contributed to a net excess of oil available to the regional refineries which resulted in price depression. Inflated nominations by shippers served to further pressure spot market prices. Simply put, supply exceeded demand within the Rocky Mountain region. Refinery maintenance issues aside, demand at the refinery has been relatively constant for the region and it is the increases in production and importation that have lead to an oversupply of crude. The simple solution would be to export oil out of the region to other refining markets; however, necessary export pipeline capacity is lacking (**Table 1**).

### **Future Projections**

The region’s narrow balance - imbalance between local refining and pipeline exporting capacity means that perturbations on the demand side, both within and outside of the region, can have significant short-term impacts on price differential (Muse Stancil, 2006). With the predicted increase in regional crude production, it is likely that the pricing differentials will continue to exceed historical averages (IOGCC, Undated b). This tendency is likely to persist until:

- 1) new pipelines accessing additional refining markets are built,
- 2) existing pipelines are expanded,
- 3) new refining capacity is built within the region,
- 4) domestic production rates decline to a level at which the system is again in balance, and/or
- 5) there is a reduction in WCS production and resulting imports.\*

\*Based on CAPP (2006) projections, importation rates can only be expected to increase for the next decade and; therefore, Canadian production and imports are not likely to contribute to a return to balance.

In light of significant importation of WCS, the near-term NYMEX price differentials for the Guernsey market and the Rocky Mountain region in general are likely to continue a depressed market state over the short-term

due primarily to insufficient relief of transportation constraints. Proposed pipeline projects may serve to alleviate this situation, as long as Canadian crude imports do not expand to fill the capacity made available and, thereby, continue to pressure lower volume domestic crude contracts.

Longer-term NYMEX price differentials are dependent on the future balance between the critical factors discussed herein. It is likely that the price differential will continue to exceed historical (pre-2003) averages unless new pipeline capacity is added (Muse Stancil, 2006). Long-term continuation of the market depression may occur for the same reasons it did initially. This is not meant to imply that any long-term effects are the result of the original market downturn which was certainly exacerbated by the Suncor refinery fires and ULSD retooling; rather, long-term effects may simply be a result of continued overall imbalance between production, importation, refining and transportation.

The combined import capability of pipelines originating in Canada transporting into PADD IV is 410 M bpd (**Table 1**). They are currently utilizing only about 71% of the potential import carrying capacity of the existing pipelines. Substantial volumes of WCS are refined within the Rocky Mountain region. Therefore, it is reasonable to conclude that the Canadian import volumes are limited by the transporting capacity of the Platte Pipeline exporting from the Rocky Mountain region. This, along with the increasing trend in Canadian tar sands production, provides ample justification for planned projects such as the Keystone Pipeline (see potential solutions discussion below). However, it also suggests that if the carrying capacity of the Platte Pipeline were increased, that greater throughput volumes of WCS would be possible and; therefore, that a continuation of long-term price differential may occur. (*In fact, if additional pipeline capacity is “taken up” with additional WCS, then price differentials will be extended.*) A similar scenario could play out on the Enbridge North Dakota pipeline if increased capacity there is “taken up” with additional WCS.

CAPP (2006) forecasts total oil and oil equivalent production for Canada to increase from 2.5 MM bpd in 2005 to almost 4.9 MM bpd in 2020. Of that, oil sands production accounts for approximately 80% of total production, or >1.0 MM bpd in 2005 to 4.0 MM bpd in 2020, and all of the increasing volume. In fact, Canada’s conventional production has been on a declining trend since the mid-1990’s. In 2005 Canada delivered 289 M bpd into PADD IV and is on track to deliver a similar if not larger volume in 2006 (based on data available from the EIA website). This forecast growth could be restricted if growth of markets, pipelines, infrastructure, and refineries does not keep pace with this production.

## Summary

Repairs and upgrades to the Suncor refinery have been completed and the facility is fully back on line. All refineries should have completed the ULSD retrofits as well. Therefore, these issues no longer provide an unbalancing effect. Moving forward, seasonal fuel formulation refinery turnarounds will still occur; however, barring unforeseen future incidents these should not have the same detrimental effect that the Suncor refinery fires precipitated.

It appears that the primary bottleneck in the system is the pipelines; specifically, the Rocky Mountain region crude oil export pipelines. Imports and refining capacity also have considerable influence on the crude oil balance. However, it is the export pipelines that currently occupy the “weakest link” position. There is a need to increase crude oil export capacity specifically to accommodate domestic production. Increases in regional refining capacity orchestrated in concert with pipeline increases will be required in order to support the pipeline expansions. Any pipeline capacity *increases must be balanced on a holistic system-wide basis* in order to have a true positive impact. That is, for hypothetical example, an expansion in Pipeline-X transporting crude to Hub-

Y could serve to export more crude from the Rocky Mountain region; however, if refineries or other pipelines at Hub-Y do not have the capacity to assimilate this crude then apportionment on Pipeline-Z leaving Hub-Y is a likely outcome. So there is little, if any, net benefit realized by the Pipeline-X expansion unless refining capacity at Hub-Y or takeaway capacity of Pipeline-Z are also expanded to achieve a net balance.

### **Potential Solutions**

Canada is the #1 importer of crude oil to the US (according to the EIA website, the top five countries importing crude oil in 2005 were: Canada, 1,633 M bpd; Mexico, 1,556 M bpd; Saudi Arabia, 1,445 M bpd; Venezuela, 1,241 M bpd; and Nigeria, 1,077 M bpd); a situation which is highly advantageous to US energy security. In light of the growing demand in the US market and the trend of increasing Canadian production, there is little doubt that additional import pipeline capacity from Canada will be needed. However, this must be accomplished in a balanced manner that also accommodates the markets for domestic crude. Rocky Mountain and Canadian business interests must cooperatively examine the various contributing factors to ensure future growth in all sectors of the oil and gas industry in both countries. Creative resolution of the situation will no doubt present a complex dilemma requiring politically appropriate, equitable, and economically practicable foresight and planning in order to achieve appropriate solutions.

The following activities merit further consideration as potential solutions to the Williston Basin supply/demand imbalance and consequent price depression:

#### *Capital Improvements – planned*

- Enbridge is in the process of expanding the capacity of its' North Dakota Pipeline from Minot, North Dakota to Clearbrook, Minnesota (Enbridge, 2006 and IOGCC, Undated b). This is a phased project which is projected to be completed by year end 2007 with a maximum 30 M bpd capacity increase. As of October 2006 13.5 M bpd capacity has already been added (ND DMR, 2006).
- TransCanada Pipelines Limited (TCPL) plans to construct a new pipeline to be known as the Keystone Pipeline from Hardisty, Alberta to Patoka, Illinois which will have a transporting capacity of 435 M bpd. To date, long-term contracts of 340 M bpd are in place for the pipeline (TCPL, undated). Therefore, approximately 95 M bpd transportation capacity remains available. In order for Williston Basin crude oil to access the Keystone Pipeline, construction of an additional pipeline from North Dakota north into Canada would be required. Of additional interest is the fact that TransCanada is soliciting delivery contracts to justify installation of a connecting pipeline from its' Keystone Pipeline project branching off in southeastern Nebraska and connecting to the pipeline, terminal, and refining hub in Cushing, Oklahoma (TCPL, undated). However, this still does not provide a direct pipeline route from the Williston Basin to Cushing, Oklahoma.

Any oil shipped by the Keystone pipeline would have to be piped in 200 M barrel, or larger, batches (ND DMR, 2006). This is equal to the entire Williston Basin daily production (much of which is currently routed through Guernsey, away from Keystone); therefore, crude would need to be stockpiled in tankage and metered into the Keystone pipeline in large batches adding still more infrastructure capital expenditures.

In any case, construction of the Keystone Pipeline, which will essentially bypass the Rocky Mountain refining market, could provide some relief from Canadian import pressures exerted in the Guernsey market area. If currently through-flowing WCS on the Platte Pipeline capacity could be diverted to the Keystone pipeline (a possibility since ConocoPhillips is a major importer on the Express/Platte system



and they are a probable 50% partner in the Keystone project), then this could provide significant relief to the Guernsey market even without construction of the additional pipeline from North Dakota into Canada to access the Keystone. Therefore, if capacity made available on the Express/Platte system is not “taken up” by other WCS producers, then the construction of the Keystone Pipeline may represent one of the more positive solutions available. However, the project will not be completed until 2009; such a solution does not address the short-term conditions.

Similar success might be achieved if it were possible to expand the Platte Pipeline; again assuming that any increased capacity was not fully “taken up” by WCS. As noted earlier, the Express Pipeline is running significantly below capacity and appears to be constrained by both the limited Rocky Mountain refining capacity and the takeaway capacity of the Platte Pipeline. Therefore, it is only realistic to assume that any expansion of the Platte Pipeline would most likely largely be filled by large-volume, long-term contracts that only the WCS producers are able to negotiate.

#### Capital Improvements – proposed or contemplated

- Suncor is considering expansion of its Commerce City, Colorado refinery (IOGCC, Undated b); the upgrades and retrofits completed in May 2006 already allow it to process more WCS (Suncor, 2006). Because this is a Canadian owned refinery, it is unclear if this would benefit domestic production from the Williston Basin.
- Reversing the flow direction of Enbridge’s Portal pipeline into Canada would potentially transport 25 M bpd of Williston Basin crude into Canada (Enbridge, 2006).
- It has been proposed that Kinder Morgan’s Pony Express pipeline from Riverton, Wyoming to Kansas City, Missouri be reconverted from transportation of natural gas back to crude oil (IOGCC, Undated b). Reportedly, this pipeline had a capacity of approximately 150 M bpd (Richards, 2006).
- Expansion of the Tesoro Mandan refinery would provide a long-term solution for refining; however, a refined products pipeline would be necessary to export the products as the local market has no growth opportunities. It would likely require a long pipeline to reach an expanding market (ND DMR, 2006). This potential solution seems unlikely in light of market challenges facing the refined products.

#### Market Strategies

- Aggregation of crude among regional producers to facilitate marketing of domestic production by greater volume and longer term (IOGCC, Undated a). Such a concept is interesting in that it would provide greater collective negotiating power than each of the smaller US producers have independently; however, it is still limited by the pipeline capacity stranglehold.

#### Market Incentives – to drive expansion of pipeline and/or refinery capacity

- Quality Bank (this is a project currently under consideration by the North Dakota Oil and Gas Research Council) – involving the concept at looking at “quality banks” (blending facilities) to see if crude oil quality can be blended/combined to optimize marketability.

#### Institutional Measures

- Creation of a US/Canadian forum to evaluate a means towards achieving an optimal balance between the need for importation of Canadian crude and the necessity of avoiding displacement of the Rocky Mountain regional production. Such a forum should include representatives of the refining industry for input regarding the most advantageous volumetric ration for WCS and Wyoming Sweet etc.

- FERC rules regarding pro-rationing should be revised to sufficiently discourage shippers from over nominating during periods of constrained pipeline capacity. Pro-rationing of crude oil pipelines that export oil from the Williston Basin based on revised prorationing rules and tariffs if done in conjunction with additional capacity capabilities will avoid recreating a similar problem on a larger scale in the future. But, if additional capacity is created without commensurate changes in regulatory protocol, price differentials are likely to be repeated in the Williston Basin.
- Establish state tax incentives or royalty relief to incentivise companies to commit to new construction or expansion projects that will provide a degree of over capacity in the system (IOGCC, Undated a). Such an approach should provide for a coordinated effort among the affected states Public Utility Commissions to ensure comprehensive planning.
- The North Dakota legislature could consider passing new legislation creating a Pipeline Authority tasked with engaging in and supporting the pipeline development process.
- The IOGCC should continue the regional task force to explore the possibility of establishing consortiums for aggregation of crude oil for marketing purposes (such as might be employed to collectively commit to the available volume on the Keystone Pipeline project) or for the development of new or expanded pipelines or refineries, and otherwise provide regional coordination and planning for production, shipping and refining capacities, and projections.

## References

- BSBJ. 2006. Oil Pipeline Capacity Improves. Big Sky Business Journal. Interview with Tad True (The True Companies) dated September 21, 2006.
- CAPP. 2005. Crude oil Pipeline Expansion Summary. Canadian Association of Petroleum Producers, dated February 2005.
- CAPP. 2006. Canadian Crude Oil Production and Supply Forecast 2006-2020. Canadian Association of Petroleum Producers. Dated May 2006.
- EIA. Undated. Website: <http://www.eia.doe.gov>
- Enbridge. 2006. Pipeline Capacity and Enbridge Pipelines (North Dakota) Expansion Proposal. Williston Basin Petroleum Conference, dated May 8, 2006.
- Frontier. Undated. Frontier Oil Corp. website: <http://www.frontieroil.com>
- Frontier. 2006. Frontier Oil Enters into Definitive Agreement for Construction of New Pipeline to Its Cheyenne Refinery. Press release dated April 4, 2006; available on Frontier website.
- IOGCC. Undated a. Crude Oil Task Force Draft Executive Summary.
- IOGCC. Undated b. Refining White Paper.
- IPAA. 2006. Oil Pipeline Regulation and the Federal Energy Regulatory Commission. Independent Petroleum Association of America website.
- KMC. 2006. Kinder Morgan Canada website (dated June 2006):  
[http://www.tmxproject.com/data/2/rec\\_docs/557\\_At\\_A\\_Glance\\_2006.pdf](http://www.tmxproject.com/data/2/rec_docs/557_At_A_Glance_2006.pdf)
- Muse Stancil. 2006. North American Inland Crude Market Overview. PowerPoint presentation dated April 2006.
- ND DMR. 2006. Williston Basin Crude Oil Transportation Bottleneck. North Dakota Department of Mineral Resources Newsletter, vol.33, no. 2.
- PEP. Undated. Pacific Energy Partners, LP website: <http://www.pacificenergy.com>
- PPLC. 2006 a. Platte Pipeline Company, Supplement No. 7 to FERC No. 1456, Implementing Revised Proration Methodology. Letter to FERC from Platte Pipe Line Company dated April 19, 2006.
- PPLC. 2006 b. Initial Post-Technical Conference Comments of Platte Pipe Line Company. FERC Docket No. IS06-259-000, dated August 4, 2006.
- Richards, D.C. 2006. Crude Oil Production, Pipeline Transportation and Refining. Issue Brief, Wyoming Legislative Service Office, dated May 25, 2006.
- Suncor. 2006. Suncor Energy Completes Upgrade to Its Commerce City Refinery. Press release dated June 26, 2006; available on Suncor website: <http://www.suncor.com>
- TCPL. Undated. TransCanada Pipelines Limited web site: <http://www.transcanada.com/keystone/index.html>
- Trench, C. J. 2001. How Pipelines Make the Oil Market Work – Their Networks, Operation and Regulation. Memorandum prepared for AOPL and API Pipeline Committee, dated December 2001.

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<sup>i</sup> *Id.*, at P 14 n.8 (citing *Total Petroleum, Inc. v. Citgo Products Pipeline, Inc.*, 76 FERC ¶ 61,164, at 61,947 (1996); see also *ConocoPhillips Transportation Alaska, Inc.*, 112 FERC ¶ 61,213, at P 28 (2005)(finding that “prorating policies based on historical volumes are an acceptable means of allocating capacity.”).

<sup>ii</sup> 18 C.F.R. § 341.8 (2005)(“Carriers must publish in their tariffs rules governing such matters as prorating of capacity . . . .”); see also, *SFPP, L.P.*, 86 FERC ¶ 61,022, at 61,114-16 (1999).